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Unaccustomed As We are

l. 44 No. 1

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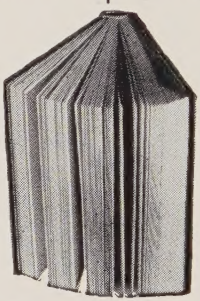

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M. E. McIVER, Editor

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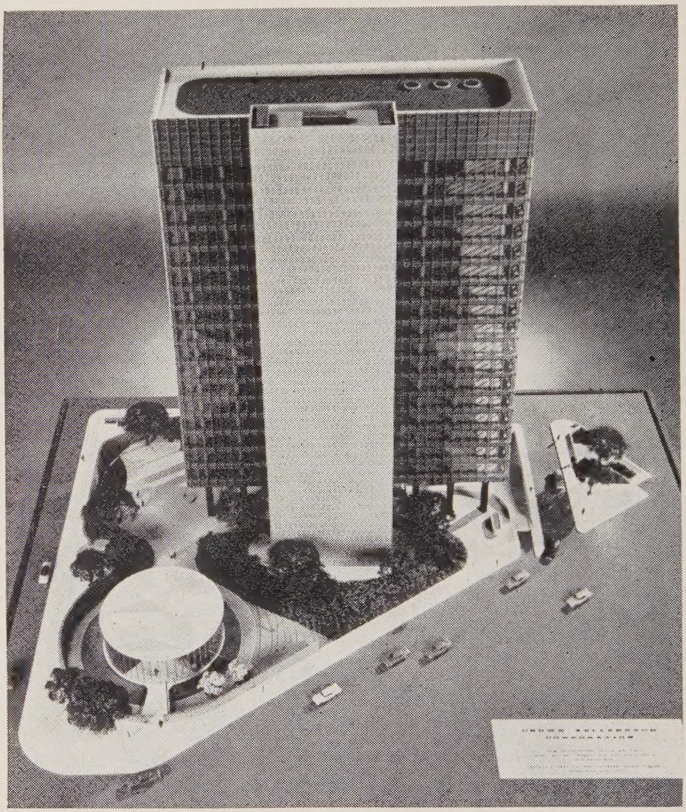
Modern, Functional Office Building



Crown Zellerbach Building, new office building in downtown San Francisco, situated on a wedge-shaped site, covering approximately 1⅓ acres. The building will occupy one-third of the land area. The rest of the grounds will be a public plaza with gardens, trees, walkways and a reflecting pool, seen on the right. The circular bank building is in the left-hand corner.

(PROFESSIONAL ENGINEER welcomes photographs of unique buildings, commercial structures, churches, clubs or schools, with short descriptions.)

Intricacies of Ethics

M. E. McIver
National Secretary, A.A.E.

EVERYONE oversimplifies the problem of ethics. Even the great philosophers and writers have been too didactic on the subject. They have said, "All things whatsoever ye would that men should do to you, do ye even so to them," and, "To thine own self be true, and it must follow as the night the day, thou canst not then be false to any man," as if these two broad rules could be mechanically and precisely applied to every situation in which ethical conduct must be determined. If every individual were capable of applying these rules to specific situations, there would be no need of "codes", "canons", and "principles of professional conduct," but the Golden Rule is an ideal, not a formula, and the factors in ideals cannot be precisely determined as can the elements of a formula.

Problems of ethics arise from human relationships, and they are never simple. Questions arising from an obligation of an individual to his profession, for example, cannot be isolated from his duties and responsibilities as the head of a family and as a citizen. The first difficulty, therefore, is one of recognizing his ethical obligations to the person or group most directly concerned, and this obligation, if it can be clearly discerned, must be reconciled with the possibly unhappy impact of the course of action it demands upon other individuals and groups, to whom he also owes "ethical" treatment.

Around every person is a web of human relationships, some of them permanent, some relatively transitory, some almost incidental; some are vital, others comparatively trivial. Marriage vows, for example, lay upon a man's ethical obligations that are vital and permanent, in the promise to love and cherish his wife in sickness and in health. Relatively trivial and certainly incidental is the human relationship which may make a man feel that it is his ethical obligation to give his seat in a crowded bus or subway to any woman who is standing in the aisle. Just how great an obligation he feels, however, in either of these relationships will be determined by his interpretation of the Golden Rule—and his sanction of custom and tradition. He must decide what he "would" that someone else (his wife or the lady in the aisle) do for him if the situation were reversed—what

he could *reasonably* wish someone else to do for him—before he can deci what his own ethical obligation is.

Up to this point, the problem is being considered in isolation—apa that is, from other relationships which make their ethical demands up this individual. If the situation were unique—a one-time occurrence there would be a relatively simple solution, but if the bus or subway crowded every morning and every night, the problem becomes compl If, at home, his wife (whom he has promised to love and cherish) is casionally weary and swamped with work, no great ethical struggle involved in his decision to lend a hand. If she is *always* exhausted a overburdened, and he cannot afford to hire a helper, then the individ may recognize ethical obligations to take over some of the housew regularly (in addition to the care of the lawn and furnace and the han man jobs that are traditionally his).

The Individual's Obligation

In each case there is a comparatively simple and direct relationship which ethical obligations can be identified, seemingly apart from ot relationships and their claims. Actually, however, the individual in relationship with his employer has an obligation to report to work ev day as physically fit and alert as possible, ready to concentrate with c plete efficiency upon whatever work is assigned. He should also allo portion of his free time to study and reading of technical journals and professional meetings. In determining, therefore, how much work at ho he is ethically obliged to take over, the individual must also consider ethical claims imposed by his duty to his employer.

In such situations, the Golden Rule cannot be applied with the p cision possible in determining, from the known lengths of two sides o right triangle, the length of the hypoteneuse. Even in mathematics t rule would not work well if the length of one side were expressed in qua and of the other in feet, and the values are comparably mixed when a m must weigh ethical obligations imposed by his marriage vows against th he assumes as an employee.

Even more involved are the relationships that grow out of memb ship in a profession. The individual must at the same time faithfully se and safeguard the interests of his subordinates, his superiors, and client to whom all three stand in a fiduciary relationship, directly or directly. As the chasm between employees and employers has widened late years, the men in the middle have bcome increasingly aware of difficulty of reconciling ethical principles which govern their relations with subordinates and superiors. The old close relationship of all the m in the "engineering department", and of the department with engine in the higher echelons of industry, has been lost in giant enterprises, pa because of the higher ratio of engineers to production workers, pa

hrough legalistic distinctions imposed by the National Labor Relations Act.

Perhaps the most complex and troublesome ethical problems arise from he obligation laid upon members of professions to safeguard the public. deally, engineers should speak out courageously to avert ghastly blunders n public works programs or to expose graft costly to the public. Engineers who are aware of such situations must weigh conflicting ethical bligations (to the public and to their "brother engineers") before deiding to campaign against unsafe or inordinately costly programs. They must, moreover, proceed in the way prescribed by their own Canons of Ethics—i.e., through the Technical Societies, not in individual crusades r through lay organizations. Very definite limitations are imposed by he Canons on crusaders, or at least upon the methods they use for bringng about public investigations.

Even when an engineer is employed by a government agency to ascertain the amount of overcharge paid by the agency for work on an unsuccessful project, he may find himself in conflict with certain provisions of he Canons if he exposes corruption on the part of a "brother engineer" n carrying out his assignment. If as an employee of a private firm he cannot countenance what he considers unethical conduct on the part of his mployer and resigns, he may find it difficult to get another job.

"It is Ethical to be Ethical"

Among societies and among engineers, as Mr. Morris L. Cooke once renchantly observed, there is great accord on the principle that "It is thical to be ethical". In principle everyone agrees with the Golden Rule nd the various creeds, vows, and codes adopted by the societies. Some elatively specific rules of professional conduct have evolved in codes and anons of ethics in almost a half-century of earnest discussion of the subect, but little progress is observable in development of agencies for enorcement of the rules. What real progress has been made is indeterminble. It consists of the clearness with which individual engineers can lentify ethical factors in their complex human relationships and in the ourage and consistency with which they live up to their obligations.

Bridgebuilder Honored

At the Honors Convocation at Hunter College in New York City on Wednesday, April 29, the President's Gold Medal for Distinguished Service was presented to David B. Steinman, internationally famous bridge ngineer.

At the Commencement Ceremonies at Syracuse University on June the honorary degree of Doctor of Engineering will be conferred upon r. Steinman. This will be the bridgebuilder's twentieth honorary degree. e now holds honorary doctorates in Science, Engineering, Literature, umanities, and Laws, from leading universities on three continents.

Chaffey Chapter Celebrates

Our Student Chapter at Chaffey College this year has a group o active young engineers at its helm. Less Weaver, the president, is a lik able chap, a Navy pilot and is doing an excellent job. His co-workers ar Ken Williams, vice president; Helmut Sonnenberg, treasurer.

Many excellent trips have been held and others are planned for th boys. The annual spring vacation field trip lasting four days took the bo to the Kaiser Eagle Mountain Iron Mine, Parker Dam and Power Plan Metropolitan Water Aqueduct Facilities, Davis Dam and Power Plan Ford Proving Grounds as well as some mining properties near Kingma Arizona, and an inspection trip to Hoover Dam and Power Plant. Th boys camp out and cook their own meals, have a lot of fun, and gather lot of information and know-how that will stand them well in the futur

The high-light of the season for the Chapter was their Twentie anniversary celebration, held in February. In telling us about the even Arthur E. Flum, the personable sponsor of the group, writes:

"In planning for the affair we thought it would be nice if we cou get a couple of our original officers to come and celebrate with us (w secretly wished that all five of them could come but knew that would b unlikely). Well, we were delighted to have all five of them make it. Ou flew back from Washington, D. C.

"You may recall that AAE issued us a charter twenty years ag which hangs in a prominent place in our room. The college student bod just got around to issue charters to the campus clubs about six or eig years ago, and they included places for the officers to sign. We alway thought, wouldn't it be nice to have the original officers here to sign th charter? Well, this was the high point of our meeting."

Let's let the Chaffey News release tell the story.

" 'Change and the Young Engineer,' speech of Donald W. King, fir president of the Chaffey College Engineers Club celebrating its 20th ann versary recently, highlighted the program at the dinner in the Stude Union building. All of the original officers of the club were present t celebrate the anniversary with the present club members and their father Arthur E. Flum, sponsor since the club's founding, and present Co-sponso Ray O. Webb. Grant Elliot, 1959 president, was master of ceremonie

"Don King, now an engineer at Aero Jet, encouraged the studen who are now training in the field. He pointed out that there were va changes in equipment, new forms of energy being used in constructio new fields opening in administrative and technical education. He urge the club members to develop their ability to communicate successfully an deligently and to prepare for field work early by making contacts whi still in college. Above all, he urged the men to develop their individu character as well as their technical skills.

Original slate of officers who returned for the h reunion of Chaffey College (Ontario, Cali- nia) Engineers Club, A.A.E.
Left to right: Ray O. Webb, present co- nsor of the club; Original officers—Dr. Le- d Cole, *corresponding secretary*, now chief earch chemist of Consolidated Electrodyna- s, Pasadena; Donald W. King, *president*, now engineer at Aero Jet, Azusa; Kach Taka- nabe, *treasurer*, now with General Telephone Co.; Howard Hesche, *recording secretary*, now engineer with General Telephone Co.; David Curtis, *vice president*, now architect at Corona del Mar; Arthur E. Flum, sponsor since the club's founding.

"Officers of the first club signed the charter presented by the student dy. Each officer was awarded a small metal-anvil paper weight, inscribed o Forge Our Friendship.' Members of the 1959 club presented Sponsor lum with an appropriately inscribed plaque.

"The Chaffey club was founded in 1939 and has since developed in e and strength. Nearly 600 young men have been members of the club, rding to Sponsor Flum. It is a student affiliate of the American Asso- tion of Engineers.

"Besides Mr. King, there were present from the original group, Dave rtis, vice president, architect at Corona Del Mar; Dr. Leland Cole, responding secretary, now chief research chemist Consolidated Electro- namics, Pasadena; Howard Hesche, recording secretary, engineer with local telephone company; Kach Takanabe, treasurer, now with Gen- l Telephone.

"As an enjoyable part of the program, the returning officers heard the ails of the annual spring field trip which has been a part of the club since its beginning."

We are mighty proud of this group of young engineers and are in- ted to Mr. Flum for his interest in the boys and their chapter. Art Flum promoted to the rank of Commander in the Naval Reserve in 1955.

Abraham Epstein

In the passing of Abraham Epstein society and the engineering pro fession has lost a great citizen, an excellent engineer and a renowned arch tect.

Mr. Epstein was a graduate of the University of Illinois receivin his Bachelor of Science degree in Civil Engineering in 1911. As co sulting engineer to the Central Manufacturing District and the Union Sto Yard and Transit Company he designed projects valued at over $100 000,000, including the reconstruction work after the fire in the Stock Yar in 1934.

In 1947 the firm of A. Epstein and Sons, Inc., was incorporated wi Mr. Epstein as president, and his sons, Raymond and Sidney, as the oth principals. Mr. Epstein was responsible for the design of the Borg-Warn Building in Chicago, for several metal refining and manufacturing plan for the Fansteel Metallurgical Corporation in North Chicago and in Mu kogee, Oklahoma, warehouse and office buildings for the United Stat Rubber Company in Chicago and Los Angeles, Jewel Tea Company, Ge eral Electric Company, and several buildings for Mount Sinai Hospi of Chicago, and, of course, many others.

Throughout the years he had served on many civic and techni committees and at the time of his death was a member of the Mayor's A Chicago Citizens Committee and the Committee on Standards and Te of the Chicago Building Department. He was a member of the Americ Association of Engineers for many years, as well as the American Institu of Architects, American Society of Civil Engineers, and several others.

A.A.E. is most happy to welcome to membership his son, Raymon who joined the Society shortly after the death of his famous father.

A. Epstein and Sons, Inc., is one of the architectural firms recen named to design the two new federal office buildings to be erected in C cago; a 4½ million dollar building to replace the U.S. courthouse, and 38½ million dollar structure for the new court house.

Engineer Re-elected

Herman W. Schultz was recently re-elected to serve as Councilm for two years by the electorate of Beloit, Wisconsin. This is the sixth ti that Mr. Schultz has been re-elected as Councilman. Kevin J. Keena council president for the last four years, polled the heaviest vote. M Schultz was second in the count and Prof. Harry R. Davis, third. M Schultz has been a member of the American Association of Engineers f many years and a staunch supporter of its aims and ideals.

Unaccustomed As We Are

Charles E. Juran, Project Engineer
Grand Central Rocket Co.

WHATEVER else they may accomplish in this decade, engineers and scientists have firmly established themselves in the public speaking eld. "Air Pollution", "Atomic Power", or "Earth Satellites", have be-ome favored topics at the Rotary Club. The public wants to know, at long st, about Twentieth Century technology, and has prevailed upon the ngineers to inform them.

From a professional point of view, all of this is desirable. The prestige technology is enhanced by public awareness of its role in our society. nfortunately, however, the engineer is frequently an unwilling par-

About the Author

Charles E. Juran was formerly a Production Engineer with the Ford Motor Company. He joined Grand Central after serving as Chief of Power Plant Engineering at Norton Air Force Base. An engineering graduate of Cornell University, he has authored various technical articles and contributed to industrial literature.

His talk on Rockets, Satellites, and Space Travel has been presented to more than fifty service clubs, women's groups, professional societies, and civic organizations throughout Southern California. We publish this excellent article because it is on a subject which has long been discussed in A.A.E. and in "Professional Engineer," namely the need for good public relations and better presentation of technical matters by engineers, which means a more articulate profession.

pant in this vast education program. The dry-as-dust reading of a hnical paper from the last metallurgy seminar simply will not do. The wanis Club would rapidly drop off to sleep; even if they listened they uld not understand.

The public speaking opportunities available to engineers are many. ey face a two-fold problem of presentation technique and idea com-nication, however. Traditionally poor communicators, they face a severe in the requirement to translate modern technology into language that average non-engineer can understand. The author has built a successful fessional lecturing practice upon the idea that any technical concept be put in layman's terms. It is then merely necessary to present it in nteresting fashion.

How To Get Started

For good basic groundwork, nothing can take the place of a publ speaking club, such as Toastmasters International. Although many eng neering schools provide a course in public speaking, they are of short dura tion and often lost in the dim long ago. A group of working people, mee ing together to learn public speaking, affords many benefits. Of primar importance is the fact that *it brings the engineer in contact with his non technical counterpart.* Here he can begin to work on the language barrie Secondly, it can conquer stage jitters; the only real cure to nervousnes is to keep giving talks until it becomes almost second nature.

Many firms have a company Toastmasters or speakers club. Thes should be avoided, where possible, since it does not provide the varie background of participants found in a group drawn from all walks of lif No engineer could expect to learn much from a group who, like himsel are all engineers. Better to throw in attorneys, a tire salesman, realtor doctors, a high school teacher. Even a wild-eyed Socialist can add som thing to the melting pot.

Organizations such as Toastmasters provide training in speech orga ization, presentation techniques, thinking on one's feet, and so for Members speak before the group at least once each meeting. Both prepar and impromptu speaking is emphasized. From a program such as th confidence and capabilities are built rapidly.

From a group such as this, once some degree of competence is achiev outside speaking requests will be forthcoming. Perhaps another mem is in a church group and would like you to present your hi-fi speech the Or the club has been asked to provide speakers to promote a school bo issue coming up. Sooner or later opportunities such as this will arise.

Moreover, there is nothing wrong with contacts being made on speaker's own initiative. There is no reason to be shy or coy in this r spect. The program chairmanship of an organization, particularly o which meets weekly, is a particularly arduous and thankless task. Such person is generally delighted to have a program drop into his lap. It entirely in order for the potential speaker to make the initial move. course, no fee is charged for these first forays.

Selection of a topic is a critical matter, but not as difficult as mig be presumed. One easy technique is to pick some obscure branch of know edge which can be rather thoroughly covered in a 30 or 60 minute speec Prof. David Daitches of Cornell has been amusing audiences for yea with his "Scotch Whiskey" lecture. I have heard an entertaining hal hour speech on "Mud". An engineer ought to look to his own professi and job for ideas. Actually, it is the method of presentation which mak any topic palatable.

The important objective of these initial speeches is to test reaction develop and improve the speech, and sharpen it for professional present tion. Your contacts are the organization program chairmen. Work wi

hem, have their problems in mind, and you will have good results.

Consideration might be given to use of a speakers' bureau to obtain ookings. The speakers' bureaus are regularly turned to by organizations; enerally by those who have only an occasional program and have not leveloped the mechanics of providing speakers on their own. Before pro- noting your program, an agent will generally want to hear you first, and t is up to you to arrange this. Agencies charge a commission, perhaps 0 or 20% of the fee obtained. On the other hand, they provide speaking pportunities which the lecturer might never obtain on his own. In addi- ion, all the paperwork, contract signing, and details are worked out by he agency.

How To Operate

The key to successful public speaking, at the professional level, is ublicity. One of the best and easiest means is simply word-of-mouth ublicity from one club member to another. If you are a hit at the Center- ille Rotary, someone from the Kiwanis Club is going to hear about it. So ill the Middletown Rotary, 25 miles away. In this way, your circle f operations widens.

The organizations want to help you with your publicity. Their public elations objectives are the same as yours. Provide them with the material nd they will festoon their newsletters with it, get it in the newspapers, nd in other media. A must is ample quantities of glossy photo portraits. end one, along with a biographical sketch, to every program chairman ho has booked you. It is also helpful to include a news release of your peech. Write it just as you like it to appear in the newspaper and they'll enerally use it as is. It can be mimeographed in advance, with the appro- riate club name, place, and date filled in.

Professional speakers generally prepare a one or two page handbill dvertising their program. These "flyers" can be sent in response to in- uiries, used by the agency, and are handy in promoting yourself in new eas. Handbills such as these are common in show business and most inters can show you samples.

A postcard to any city's Chamber of Commerce will bring you a list ll all their civic organizations, service clubs, and so forth. Almost every try is a potential customer. A letter addressed to the program chairman xplaining your speech, and enclosing a handbill, will generally bring sults. These mailings should be timed; clubs have their active seasons nd off seasons. Service clubs will usually plan their year's program in he early fall. Groups in a beach city might be most active in the summer; esort resorts come alive during the winter months.

As has been mentioned, it is best to make no charge while getting arted. A good milepost to watch for is the first request for your speech hich comes through no doing of your own; the product of word-of-mouth blicity. Explain that due to the demands on your time a small honor-

arium is charged; perhaps $15 or $20. The fee is your regulator; if, late on, you find yourself spending too much time on the circuit, simply rais the rate a little. Within reasonable limits, this procedure will not affec total income. There is no fixed price range for speeches; the author eventu ally settled on a $75-$125 fee for the large organizations.

Some Pointers

The only really important thing to keep in mind at all times is th attitude of your audience. Consider the service club member; he work all morning at his trade, then comes to the luncheon meeting. I suspec that the average member isn't too interested in a "save-the-world" sermon or some such profound message. He wants to learn something, but he want to be entertained too. Humor is a precious asset and the speaker who ca make a group laugh will be remembered long after the soul stirring orato is forgotten. Try to avoid stereotypes—"new wonder-drug" explanation travelogues, foreign policy statements, and so forth invariably invite mas siestas. Engineers ought to stay within their field of competence. Leav the social and political implications out unless you are qualified to discu them.

Most clubs allow 30 to 45 minutes for a program. An interestin speech can occupy all of this with ease—it is best to avoid the use cumbersome visual aids such as movies or slides. For one thing, the equi ment required is a distraction and the speaker will not have full attentio Moreover, a good lecturer should not have to resort to props in the rel tively short time allocated. This does not preclude, of course, demo stration objects, pictures, and the like, provided they prove no distractio If drawings are used they should be "de-engineered"—use pictorial view rather than involved sections and views that have to be explained.

A speech should be continually revised. Perhaps an ad lib joke goe over well—incorporate it. Discard sections which seem to arouse no inte est. This is a never ending process, indeed, you may find the speech completely new after a year or so. Which brings to mind yet anothe factor opportunity; once the local market has been covered, it is a simpl matter to write a new speech and start the same process all over again

Rewards

There is much to be gained by all participants in a lecture program such as that described. The layman has already demonstrated his interest in th new technology. The engineering profession can do much to bring its mes sage to the public; the speaker's firm gains in public relations and publicity Most important, however, the engineer himself has the opportunity t develop a communicative technique which will be of great value in both professional and avocational pursuits.

Of course, the supplemental income provided by a program such a that described is sufficient justification for the efforts involved. The autho

has added some 20% to his salary by spare time lecturing. Many people earn their living, or a substantial portion thereof, on just this sort of activity. For those otherwise employed, the publicity is a help to them in their primary vocation as well.

The people one meets on the lecture circuit are first rate. They are willing to pay a price (directly or indirectly) to learn something new, and consequently the calibre of club members is generally very good. This affords opportunities for some fine personal contacts in other professional fields; opportunities which would be unlikely to arise in other circumstances.

For those who are interested in such things, there is the chance to become well known in the community and something of a public figure. This has occasionally been a stepping stone to greater things. Finally, public speaking on a large scale affords one the opportunity to present his ideas in the public forum, to carry forth any message he may desire, and perhaps mold others' ideas with it. In the final analysis, there are few objectives more far-reaching and worthwhile.

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Bakersfield College Chapter

Officers of the A.A.E. Student Chapter at Bakersfield, California, fo the 1958-1959 season are: President, Jack Misemer; vice president, Bi Huckaby; secretary, James Hurst; treasurer, Lothar Schicker, and Rich ard Castro is Sgt. at Arms. Advisors of the group are Don Poole an Nicholas Pananides.

Secretary Hurst writes headquarters in true college-boy fashion tha "the Bakersfield Chapter of A.A.E. is one of the most active clubs on th campus. We have just completed an active month of interschool activitie participating in events such as sponsoring a girl for homecoming quee and a float for the homecoming parade."

Business prophets tell what will happen but business profits tell wha has happened.

Yesterday is a cancelled check; tomorrow is a promissory note; tod is all the cash you have.

There are two kinds of business men; one who is selling out and o who is out selling.

White-washing the pump never purifies the water.

Shortage of Engineers?

The writer believes that the real shortage is not engineers but "desi of accomplishment" within the individual engineer.

There are but two classes of engineers: "those who accomplish to live and "those who live to accomplish."

W. C. Sechrist, Havana, Cuba

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echnology of Columbium (Niobium), ited by Conser and Sherwood, in-ides papers presented at the Sym-sium on Columbium of the Electro-rmics and Metallurgy Division of the . Chem. Society, May, 1958. $7.00.

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Technical Writer, The, 1959, by J. W. Godfrey, editor, Technical Instruction, B.B.C., and M.I.E.E., Dir., Chapman & Hall, Ltd. $8.50. The authors assume in their book that the writer-to-be is grounded in the principles of composition, and desires only to put a polish on his work.

Basic Geology for Science and Engineering, Edward C. Dapples, Prof., Geology, Northwestern Univ. 1959, $9.50. A systematic analysis of those processes which are considered basic to an understanding of physical geology. A great deal of information is found in the tables, graphs and charts.

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Electromechanical Energy Conversion, David C. White, and Herbert H. Woodson, Professors of El. Engrg., M.I.T. 1959, $12.50. Surveys the fundamentals and applications of the dynamic behavior of devices and systems. An excellent textbook.

Dynamics of Flight, Stability and Control, Bernard Etkin, University of Toronto, 1959, $15.00. The work offers for the first time in book form new material on inverse problems and on flight through turbulent air. Automatic control theory is approached from the aeronautical engineer's viewpoint. Many graphs and examples are included.

Metallurgy of Vanadium, William Rostoker, Armour Res. Foundation, $8.50. The book gives a full discussion of the subject and provides a comprehensive treatment of the extraction, properties, and processing of the metal. By so doing it serves as a ready reference for those who seek to use new materials for special applications.

General Theory of Electrical Machines, Bernard Adkins, M.A., M.I.E.E. Written in the interests of those co cerned with advanced theory and pra tice of engineering, and recommend for publication by Technical Pape Panels of the British Thomson-Houst Company. The text is the result work carried out over a period of years while the author was designer a consulting engineer with the Brit Company.

Water Supply and Waste-Water D posal, Elements of, Gordon M. Fa Harvard Univ. and John C. Geyer, T Johns Hopkins Univ. $8.95. A disc sion of waters and wastes emphasiz scientific principles on which sound gineering is based.

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Manufacturing Processes, 4th ed. My L. Beeman, Prof., M.E., Univ. of Te $8. Every chapter in this new edi has been rewritten and although descriptive than previous editi

greater stress has been placed on principles and materials. Photographic illustrations have been revised to show modern equipment and good use has been made of line diagrams. New topics such as metal coating processes, ultrasonic machining, automation and electroforming are included in the text.

Elementary Soil and Water Engineering, Glenn O. Schwab, Prof., Agri. Engrg., Ohio State Univ.; Richard K. Frevert and Kenneth K. Barnes, both Profs., Agri. Engrg., Iowa State College; and Talcott W. Edminster, Agri. Engr., Soil and Water Conservation Res. Div., Beltsville, Md. $6.25. This book was prepared for the reader who has had no previous training in engineering. It presents up-to-date information gathered through experience and research. Beginning chapters of the book deal with the use and adjustment of surveying equipment and the later chapters discuss various phases of engineering problems frequently found on the farm.

Earth Pressures and Retaining Walls, Whitney Clark Huntington, Prof., C.E., Emeritus, Univ. of Illinois. $11.50. Written primarily as a reference work for the structural engineer and the graduate student who may be concerned with the design of retaining walls; bridging the gap which often exists between retaining wall design and that part of soil mechanics which deals with earth pressures and foundations. Special attention is given to counterfort retaining walls. Well illustrated.

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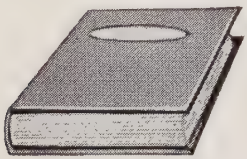

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